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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,066	07/31/2003	Horst K. Wieder	080488-0127	2047
23524	7590	09/14/2005	EXAMINER	
FOLEY & LARDNER 150 EAST GILMAN STREET P.O. BOX 1497 MADISON, WI 53701-1497			EWALD, MARIA VERONICA	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 09/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

1.2

Office Action Summary	Application No.		Applicant(s)	
	10/632,066		WIEDER, HORST K.	
	Examiner		Art Unit	
	Maria Veronica D. Ewald		1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) 30-46 and 50-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 47-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/31/03</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

13. Applicant's election with traverse of Group I, an apparatus for cooling a mold, in the reply filed on August 8, 2005 is acknowledged. The traversal is on the ground(s) that a serious burden on the examiner has not been shown. This is not found persuasive because a serious burden on the examiner has been shown according to section 803 of the MPEP, since Groups I, II and III have been given separate classifications, and thus require separate fields of search. The requirement is still deemed proper and is therefore made FINAL.

Claims 30 – 46 and 50 – 55 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on August 8, 2005.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 4, 7 – 10, 12 – 18, 23 – 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsutsumi (U.S. 4,976,900). With respect to claims 1 – 4, Tsutsumi

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teaches an apparatus comprising: an injection mold having one or more portions (column 2, lines 25 – 27, 55 – 57), a gas supply tube containing a gas at a first pressure (item 11 – figure 1; column 3, lines 1 – 2), an orifice member having an orifice thereon in thermal communication with at least one portion of the injection mold, wherein the orifice member is operably coupled to receive the gas from the gas supply tube, and wherein the orifice member is adapted to release the gas from the gas supply tube through the orifice (items 10 and 13 – figure 1; column 3, lines 2 – 8) and a gas exhaust channel containing the gas at a second pressure, wherein the gas exhaust channel is operably coupled to receive the gas from the orifice member and wherein the second pressure is lower than the first pressure (item 22 – figures 1 and 3; column 4, lines 20 – 25), whereby at least one portion of the mold is cooled (column 4, lines 1 – 2). The reference further teaches that the gas includes air (column 5, lines 44 – 46); that at least a portion of the gas supply tube is cylindrical (item 11 – figure 1; column 3, lines 1 – 2) and at least a portion of the gas exhaust channel is cylindrical (item 22 – figures 1 and 3; column 4, lines 20 – 22).

With respect to claims 7 – 10, the reference further teaches that the gas exhaust channel includes a bore portion having a closed distal end located within the injection mold (item 22 – figures 1 and 3), wherein the gas supply tube (item 11 – figure 1) includes a pipe portion with an end having at least one orifice member (item 10 – figure 1), and wherein at least a portion of the end of the pipe portion of the gas supply tube is positioned in thermal contact with the closed distal end of the bore portion of the gas exhaust channel (figure 3; column 4, lines 20 – 25); wherein the gas exhaust channel

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includes a bore portion having a closed distal end located within the injection mold (item 22 – figures 1 and 3), wherein the gas supply tube (item 11 – figure 1) includes a pipe portion with an end having at least one orifice member (item 10 – figure 1), and wherein at least a portion of the end of the pipe portion of the gas supply tube is positioned adjacent to the closed distal end of the bore portion of the exhaust channel (figure 3; column 4, lines 20 – 25); wherein the gas exhaust channel includes a bore portion (item 22 – figures 1 and 3), wherein the gas supply tube includes a bore portion (item 11 – figure 1; column 3, lines 1 – 2), and wherein the orifice member has a first side operably coupled to the bore portion of the gas supply tube and a second side operably coupled to the bore portion of the gas exhaust channel (item 10 – figure 1; column 3, lines 1 – 12; column 4, lines 18 – 22); and wherein the apparatus is further comprised of the gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube, and wherein the gas supply system includes at least one gas cooler adapted to cool the supply of gas at the first pressure (item 12 – figure 1; 29 – 42).

With respect to claims 12 – 18, Tsutsumi further teaches the apparatus be further comprised of a gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube, and wherein the gas supply system can be operated to adjust the flow rate of the gas at the first pressure between a non-zero flow rate and a flow rate which is essentially zero (item 12 – figure 1; column 3, lines 3 – 4, 13 – 15); that the apparatus be further comprised of a gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube and wherein the gas supply system can be operated to adjust the flow rate of the gas at the first pressure to two or

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more non-zero flow rates (item 12 – figure 1; column 3, lines 3 – 4, 13 – 15); that the apparatus be further comprised of a gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube, and wherein the gas supply system can be operated to adjust the magnitude of the pressure of the gas at the first pressure (item 12 – figure 1; column 3, lines 3 – 4, 13 – 15); that the apparatus be further comprised of a gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube wherein the gas supply system can be operated to adjust the magnitude of the pressure of the gas at the first pressure, and a controller operably coupled to operate the gas supply system (item 12 – figure 1; column 3, lines 3 – 4, 13 – 15).

Furthermore, the reference teaches that the apparatus be further comprised of a gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube wherein the gas supply system can be operated to adjust the flow rate of the gas at the first pressure, and a controller operably coupled to operate the gas supply system (item 12 – figure 1; column 3, lines 3 – 4, 13 – 15); that the apparatus be further comprised of a gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube wherein the gas supply system can be operated to adjust the flow rate of the gas at the first pressure, a temperature sensor adapted to measure the temperature of at least one portion of the injection mold and to produce at least one temperature signal, and a controller operably coupled to receive the at least one temperature signal from the temperature sensor and operably coupled to operate the gas supply system (item 12 – figure 1; column 3, lines 3 – 4; column 4, lines 29 – 42); and that the apparatus of be further comprised of a gas supply system operably

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coupled to supply the gas at the first pressure to the gas supply tube wherein the gas supply system can be operated to adjust the magnitude of the pressure of the gas at the first pressure, a temperature sensor adapted to measure the temperature of at least one portion of the injection mold and to produce at least one temperature signal, and a controller operably coupled to receive the at least one temperature signal from the temperature sensor and operably coupled to operate the gas supply system (item 12 – figure 1; column 3, lines 3 – 4; column 4, lines 29 – 42).

With respect to claims 23 – 29, Tsutsumi teaches that the apparatus be further comprised of a gas supply system operably coupled to supply the gas at the first pressure to the gas supply tube (item 12 – figure 1) and a gas exhaust system operatively coupled to receive the gas at the second pressure from the gas exhaust channel (item 22 – figure 1) wherein the gas supply system is operably coupled to receive the gas at the second pressure from the gas exhaust system (item 12 – figure 1; column 4, lines 22 – 25); wherein at least a portion of the orifice member is in thermal contact with the at least one portion of the injection mold, thereby providing thermal communication between the orifice member and the at least one portion of the injection mold (column 3, lines 5 – 12); wherein at least a portion of the gas released from the orifice member strikes the at least one portion of the injection mold, thereby cooling the at least one portion of the injection mold (column 3, lines 5 – 12, 67 – 68; column 4, lines 1 – 4); that the apparatus be further comprised of a thermally conductive member, wherein at least a portion of the thermally conductive member is in thermal contact with at least a portion of the orifice member, and wherein at least a portion of the thermally

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conductive member is in thermal contact with the at least one portion of the injection mold, thereby cooling the at least one portion of the injection mold (column 3, lines 5 – 12, 67 – 68; column 4, lines 1 – 4); that the apparatus be further comprised of a thermally conductive member, wherein at least a portion of the gas released from the orifice member strikes at least a portion of the thermally conductive member, and wherein at least a portion of the thermally conductive member is in thermal contact with the at least one portion of the injection mold, thereby cooling the at least one portion of the injection mold (column 3, lines 5 – 12, 67 – 68; column 4, lines 1 – 4); and that the apparatus be further comprised of a gas supply valve, wherein the gas supply tube is operably coupled to receive the gas at the first pressure from the gas supply valve (item 15 – figure 1; column 3, lines 12 – 15) and wherein the gas supply valve can be operated to adjust the flow rate of the gas at the first pressure between a non-zero flow rate and a flow rate which is essentially zero (item 15 – figure 1; column 3, lines 12 – 15).

Claims 47 – 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Larsson (U.S. 5,460,761). Larsson teaches an apparatus comprising: an injection mold having one or more portions (column 5, lines 36 – 37); a pipe containing a gas (column 3, lines 50 – 51) at a first pressure and having at least one orifice member in thermal communication with at least one portion of the injection mold (item 8 – figure 1) and a bore in the injection mold at least partially surrounding the orifice member and containing the gas at a second pressure, wherein the second pressure is no higher than the first pressure (item 7 – figure 1; column 5, lines 40 – 41); whereby the release of gas

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from the pipe through the orifice member into the bore cools the at least one portion of the injection mold (column 5, lines 60 – 66). Larsson further teaches that the bore has a distal end at least partially surrounded by the injection mold (item 7 – figure 1), wherein the pipe has an end at least partially surrounded by the distal end of the bore (item 8 – figure 1), and wherein the orifice member is located at the end of the pipe (item 8 – figure 1). In addition, Larsson teaches that the gas includes air (column 3, lines 18 – 21).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 – 6, 11, 19 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsumi in view of Larsson. Tsutsumi teaches the characteristics previously described but does not teach that the apparatus have a gas exhaust system/channel with separate controllers that also surrounds the gas supply tube.

In a method to cool the mold in an injection molding apparatus, Larsson teaches that media used to regulate and cool the mold temperature can comprise of carbon dioxide, nitrogen, air or another gas (column 3, lines 18 – 20). In another embodiment, Larsson teaches that liquid carbon dioxide can also be used, which ultimately expands to become a cooling gas and is exhausted from the mold through a series of piping

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(column 5, lines 58 – 61). To cool the mold, there is a gas supply tube (items 6 and 8 – figure 1), which supply the cooling gas to the molding parts from a container (item 17 – figure 1). The supply tubes run freely into expansion rooms where the cooling gas expands and ultimately cools the mold (items 5 and 7 – figure 1; column 5, lines 42 – 45). The supply tubes are also surrounded by recesses (items 13 and 14 – figure 1). This reads on the Applicant's claim that that the gas supply tube is surrounded by the exhaust channel; that the gas supply tube is jacketed and that the gas supply system is operably coupled to the supply the gas at the first pressure to the gas supply tube includes at least one gas compressor. Larsson then teaches that the use of the capillary or supply tubes partially surrounded and through which cooling gas is expelled provides a more optimum temperature and cooling control mechanism (column 5, lines 5 – 6, 16 – 17). Furthermore, the entire cycle time for cooling the mold can be reduced (column 2, lines 58 – 59).

To adequately exhaust and control the evacuation of the gas from the molding apparatus, Larsson teaches that the cooling gas can be evacuated through pipes (item 19 – figure 1) and controllably evacuated using hand valves and a control unit (items 20 and 21 – figure 1; column 5, lines 61 – 67). In addition, working in cooperation with the controller, there is a thermoelement, which monitors and regulates the temperature of the mold (column 6, lines 38 – 39, 41 – 43). This reads on the Applicant's claims that the apparatus be further comprised of a gas exhaust system operably coupled to receive the gas at the second pressure from the gas exhaust channel, and wherein the gas exhaust system can be operated to adjust the magnitude of the pressure of the gas

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at the second pressure; that the apparatus be further comprised of a gas exhaust system operably coupled to receive the gas at the second pressure from the gas exhaust channel wherein the gas exhaust system can be operated to adjust the magnitude of the pressure of the gas at the second pressure, and a controller operably coupled to operate the gas exhaust system; that the apparatus be further comprised of a gas exhaust system operably coupled to receive the gas at the second pressure from the gas exhaust channel wherein the gas exhaust system can be operated to adjust the magnitude of the pressure of the gas at the second pressure, a temperature sensor adapted to measure the temperature of at least one portion of the injection mold and to produce at least one temperature signal, and a controller operably coupled to receive the at least one temperature signal from the temperature sensor and operably coupled to operate the gas exhaust system; and that the apparatus be further comprised of a gas exhaust valve operably coupled to receive the gas at the second pressure from the gas exhaust channel.

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the cooling apparatus of Tsutsumi with the gas exhaust system configuration of Larsson for the purposes of providing an ideal cooling and temperature controlling mechanism, shortening the cycle time and adequately controlling the evacuation of the cooling gas from the mold cavity as taught by Larsson (column 2, lines 58 – 59; column 5, lines 5 – 6, 16 – 17, 61 – 67).

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Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MVE

Joseph S. Del Sole
9/8/05
Joseph S. Del Sole